Effectiveness of 3D Pop-up Fairytale Books as a Medium of Education to Improve the Basic Knowledge of Dental and Oral Health of Children Aged 4-5 Years

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Abstract: Oral hygiene behavior in Indonesia is very poor so that the incidence of caries and gingivitis remains high. Proper toothbrushing is only found in 2.3%. Lack of proper behavior in dental care indicates that an increase of age-appropriate knowledge regarding oral and dental health is required. Among the oral and dental health education used so far, it was found that over 60% of them did not provide adequate information. This study aimed to analyze the effectiveness of 3D pop-up fairytale books as a medium of education to improve the basic knowledge of oral and dental health of children aged 4-5 years. This was a quasi-experimental study with a pre-test post-test control group design. The study population in this study involved Kharisma Islamic Kindergarten-Play Group students (treatment group) and An-Nur Kindergarten students (control group) aged 4-5 years. The study was conducted for 2 months. Assessment of the deft/dmft index was performed during the first week. Pre-test, education using media (3D Pop-up Fairytale Book/Flipchart), and post-test were performed during the second week. Only a post-test was performed during the next two weeks. According to the results of the paired t-test, the first and second post-tests, and Wilcoxon test on the third post-test, we found that there was a significant difference between treatment using a 3D Pop-up Fairytale Book (p-value < 0.05) and flipchart on the first, second post-test (p-value < 0.05), and third post-test (p-value > 0.05). 3D Pop-up Fairytale Books are effective as a medium of education to improve the basic knowledge of oral and dental health of children aged 4-5 years.

1 INTRODUCTION

In developing countries, caries problems increased in the 19th century, and slightly decreased in the late 19th century. Industral development in developing countries has resulted in eating habit changes that have led to increased caries problems among the community. According to the WHO, caries and periodontal diseases are the most prevalent dental problems among the community. Almost all the population have developed caries with time-related fluctuative prevalence and severity (Agtini, 2009).

Moreover, in Indonesia the highest rate of caries is found at the childhood age. This range of age is the susceptible time to develop dental caries, as shown by the Ministry of Health Republic of Indonesia (RI) in that oral and dental problems among children are increasing year by year. Children aged 1-4 years with oral and dental problems increased from 6.9% in 2007 to 10.4% in 2013, while in children aged 5-9 years they increased from 21.6% in 2007 to 28.9% in 2013 (Kemenkes RI, 2014). National Basic Health Research in 2007 also stated that 8 of 10 children aged under 12 years in Indonesia develop dental caries. Unfortunately, this condition is considered as normal for many parents; hence sometimes they think there is no need for preventive care such as brushing teeth at the proper time and using the proper technique (Penelitian dan Pengembangan Kesehatan, 2008).

Meanwhile, preventive care itself is an important thing that parents and children should be aware of and support in order to maintain good dental health, one of which is brushing the teeth using a proper technique. Proper toothbrushing is influenced by gender, economic, and environmental factors. Most of the population (76.6%) in Indonesia perform toothbrushing when showering in the morning and

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afternoon. However, proper toothbrushing is after breakfast and before sleep at night, and found in only 2.3% of the population (Penelitian dan Pengembangan Kesehatan, 2013).

Some influencing factors mentioned above, such as different economic and environmental factors between living areas, result in different knowledge of dental and oral health. It is clear that attention to oral and dental health among the population remains very low, and the caries rate may decrease optimally if an increase of promotive and preventive care since childhood age can be achieved, in addition to appropriate curative and rehabilitative care. Condition of lack of proper toothbrushing indicates that an increase of proper toothbrushing programs is required with consideration of age-appropriate tools and media (Penelitian dan Pengembangan Kesehatan, 2013).

It was found with the media used so far in health education, over 35 % of them do not provide adequate information for the population. Entertainment-related information is easier to be received, such as traditional puppets, theatre, fairytales, and music (FIP-UPI, 2007).

In health education programs, there is some health education that functions to support a program. In delivering health education, appropriate media are required for the target to produce maximum impact. Some media that may be used are print media such as flipcharts, leaflets, and posters; electronic media include television, video, slides, and billboards (FIP-UPI, 2007).

Health education is a learning process developed because of a necessity of health matters, and performed using scientific knowledge to produce a transformation such as activities in order to build up better health for individuals and the environment (Herijulianti, Indriani, & Artini, 2002). Therefore, oral and dental health education is required in order to instill a transformation among the population particularly at the childhood age, not just conciously knowing, but having a commitment to maintaining and increasing their own health. An attempt is required which is able to change habits, and foster and develop positive behavior using various promotion components such as health education (Maulana, 2009).

Learning indeed has an impact on behavior transformation. The learning process can take place if there is the opportunity, desire, and ability obtained from sensing or observation processes. An external stimulus is needed, which means an appropriate stimulus for children's needs that may trigger a development of emotions, observation and thinking process (Gunarsa, 2003).

Behavior is a combination process between cognitive, affective, and psychomotoric aspects. Cognition is acquired knowledge and may affect behavior patterns wherein a process is very important. Affection is a shaped behavior which involves feeling. Psychomotoric aspects may be stimulated if there is an underlying science or knowledge. Psychomotoric aspects in this context are skills that can be done independently as an action (Sunaryo, 2004). Therefore, an education program is one of the attempts to end bad habits and transform them into good habits. To create effective education, it is necessary to provide education that matches the reality and needs (DEPKES RI, 2008).

Abdurahman (2016) stated that at age 3, children have an IQ 10-20 points higher than those that never receive stimulation. This indicates that the learning process in children has a good long-term impact. Child psychologists also state that a person's behavior is shaped in childhood. Children's brain ability up to 4 years of age reaches the highest peak, and ends at 6 years of age with 90% development. However, it will develop slowly until 100% at 18 years of age (Novita, 2007).

The development period of children is classified as preborn, infancy, preschool, and school period (Gunarsa, 2003). Preborn is a period when the fetus is in the womb, and nutrition and stimuli affect growth. In infancy, physical development and motoric response begin to appear. Preschool is a period when language, thinking ability, and communication development occurs. Appropriate reading material and games are needed in this period, such as toys, pictures, and reading material that encourage children's imagination (Sujanto, 1984). School age is a period when children are ready to begin the learning process. In this phase, fantasy declines with a switch to a concrete thinking process that still involves objects and real conditions. Therefore, in the preschool period, learning activities with reading material and games using toys are important to support children's development when they later enter the age of learning (Sujanto, 1984).

In the growth and development process of children, imagination and fantasy are very important for right-brain development. For children, fairytales are stories that encourage children's imagination; thus, they are not easily bored to learn something from fairytales (Efendi, 2014). Sutanto Windura stated that a lot of methods could be used in learning to make it fun, i.e by using the left and right brain in a balanced way. Children love to read comics, watch

cartoons, and play videos. This is because by doing these things, they may find pictures, colors, and stories that boost the imagination and emotions controlled by the right brain, in addition to the text of the story that controlled by the left brain. By using the left and right brain congruently, both of them may stimulate motoric nerves (Windura, Be An Absolute Genius (Brain Management Series for Learning Strategy), 2008).

Communication is a process of transferring thoughts, called information transfer. An idea is triggered by the communicator, then sent via channels such as media, and received by an information receiver. Components of communication consist of messages, receivers, and media (Suprapto, 2009).

The most commonly used media in education are communication media. Graphic media (visual media) are media that present an idea or fact, for example, posters. The advantages of graphic media are their attractiveness, and simplifying the presented information, but has disadvantages, i.e the presentation provided is visual elements only. However, the most effective media in communication is interactive media wherein objects are not just expected to focusing on media but also can interact, for instance, educational games or simulations that require them to interact. Therefore, educational games provide a learning experience that may directly promote an interest to learn (Susilana & Riyana, 2009).

So far in various oral and dental health education programs, the most commonly used media are phantom properties. Phantom is chosen for its simplified skill training. But, sometimes it is not synchronized between science and phantom (Anas, 2014).

Video requires electronic devices. However, video has disadvantages, i.e it has to be played by a device, causing no interaction between the educator and audiences as does video tape that also needs a special device (Bastable, 2008).

Presentation media are also commonly used in education programs. They may be used to educate the masses on a large scale but it requires OHP light, thus needing such equipment to project it. Frequently, if the audience is too large, explanations in text are difficult to read, and the devices are also inconvenient to carry (Bastable, 2008).

A study conducted by Raffly Sumiani Rahmayana stated that visual information that is highly favored by children is pictures. Indeed, pictures do not guarantee increased academic performance, but make learning more interesting. The presence of attractive objects will raise the motivation to learn and comprehension may increase (Pahlevi, 2013).

Sphard performed a study and found that the accuracy rate of visual recognition was very high. The subjects involved in his study were presented hundreds of pictures repeatedly. After that, a test was performed, and surprisingly the subjects were able to recognize pairs of the pictures presented initially correctly. This indicates that pictures provide superior memory codes to text (Pahlevi, 2013).

In accordance with the information above, remembering is an attempt to recall information in the brain. Memorization and recall are the most important processes in the brain. To date, over 95% of children learn with only the left brain, remembering by the left brain only is not interesting and information is easily forgotten. Therefore, information presented in pictures will be easy to remember (Windura, Be An Absolute Genius (Brain Management Series for Learning Strategy), 2008).

Pop-up books are in three dimensions that tend to appear different in terms of perspective and shape. They can be moved and arranged naturally (Montanaro, 2000). Pop-up books provide more attractive visualizations of a story because of its pop-up feature, parts that can be moved, and the texture that immitates real objects. All of these make the story more favorable. The pop-up feature always provides surprises on each page, thus making the reader more enthusiastic and look forward to another surprise on the next page. In addition, the pop-up feature may also strengthen the delivered message and impression (Sabuda, 2008).

Through the problems appearing to date, we may know that various education media regarding oral and dental health information used so far are still less appropriate. To date, information has not been delivered and remembered well by children. This is shown by the disadvantages in each type of media; hence the increase of health behavior among the population year by year is still considered low. The authors reviewed the disadvantages and advantages of each medium commonly used in education programs, and combined the advantages of all media to make a new medium, i.e. fairytale books based on the pop-up feature. In order to do this, the authors aimed to find out the effectiveness of 3D Pop-up Fairytale books as 2 medium of education in improving the basic knowledge of oral and dental health of children aged 4-5 years.

3D pop-up fairytale books are fairytale books in three dimensions that contain basic knowledge designed for children aged 4-5 years. This study of their effectiveness was performed on kindergarten

students because good educational books and toys are needed at the childhood age in accordance with brain development and the psychology of children. In this period of time, what they receive will affect their development in the next stage, and in the period when the brain is developing rapidly. This 3D pop-up fairytale book is expected to increase basic knowledge of children regarding oral and dental health.

Figure 1: 3D Pop-up fairytale book.

Figure 2: 3D Pop-up fairytale book

2 METHODS

This was a quasi-experimental study with data analysis using a pre-test post-test control group design conducted in Kharisma Islamic Kindergarten-Play Group, Buduran, Sidoarjo and An-Nur Kindergarten, Buduran, Sidoarjo, from August to September 2016. The study was conducted for 2 months from questionnaire completion until treatment.

The sample size was determined using simple random sampling. Inclusion criteria were children aged 4-5 years, with caries assessed by deft/dmft, willing to be involved in the study as shown by parental informed consent signed by the parents, physically and psychologically healthy, and attending eduation using 3D pop-up fairytale book/flipchart media from the beginning to end.

Firstly, the subjects in the study were provided an explanation of the study and signing informed consent. Then during the first week, a pre-test was performed using questionnaire sheets to find out the baseline knowledge before treatment. After that, education was performed using a flipchart (control) and 3D pop-up fairytale book (treatment) in each group. Subsequently, a post-test was performed to find out whether there was improved knowledge or

not. During the second and third week, a post-test was done without treatment.

Observation of whether there was a difference in knowledge or not was performed by analyzing the score in the pre-test and post-test. This indicator was assessed through the answers to the questions in the questionnaire. The calculation of the score was a total of all scores, with a scoring system as follows: 1 for very poor, 2 for poor, 3 for good, and 4 for very good. A higher score indicated good comprehension of acquired knowledge.

3 RESULTS

This study was conducted in two randomly selected kindergartens in Sidoarjo, with a total of over 27 respondent children as the sample. The study performed a pre-test to find out the score of baseline knowledge among the respondents, with the education conducted in both groups. The first group (treatment group) consisted of 13 children who were students of Kharisma Islamic Kindergarten-Play Group, Buduran, Sidoarjo, educated using 3D pop-up fairytale book media. The second group (control group) consisted of 14 children who were students of An-Nur Kindergarten, Buduran, Sidoarjo, educated using a flipchart. After providing the education, a post-test was performed to find out whether there was improved knowledge or not. A post-test was performed during the first week shortly after the education, and during the second and third week the post-test was performed again. Data of the results of the pre-test and post-test was analyzed to find out the effectiveness of 3D pop-up fairytale books as a medium of education in improving the basic knowledge of oral and dental health of children aged 4-5 years.

According to the table 1, education using both media gave improved knowledge. In the treatment group, post-test 1 revealed that improved knowledge occured shortly after the education, as did post-test 2 where there was improved knowledge again, and was constant in post-test 3. Meanwhile in the control group that used flipchart media, there was an improved knowledge after education, shown by post-test 1, but decreased knowledge occured in post-test 2, then decreased more in post-test 3.

3.1 Normality Test

Table 1: Mean and standard deviation of pre-test and post-test with a 3D pop-up fairytale book and flipchart media.

Test	Media	Mean	Standard Deviation
Pre-test	3D pop-up fairytale book	29.62	2.87
	Flipchart	28.71	2.86
Post-test 1	3D pop-up fairytale book	32.92	2.17
	Flipchart	32.00	2.03
Post-test 2	3D pop-up fairytale book	33.9	1.93
	Flipchart	30.93	2.16
Post-test 3	3D pop-up fairytale book	33.69	1.79
	Flipchart	29.93	1.63

A normality test was used to test whether the data used in the study was modeled well by a normal distribution or not. In this context, there were 4 types of data classified into 2 groups based on the treatment given, as follows:

1. Study data regarding education of basic knowledge of oral and dental health using 3D pop-up fairytale book as the medium.
2. Study data regarding education of basic knowledge of oral and dental health knowledge using flipchart media.

Table 2: The result of normality test of oral and dental health knowledge.

Variable		Significance (*p-value*)	Result
Data from the result of pre-test and post-test of education in improving oral and dental health knowledge using 3D pop-up fairytale books	Pretest	0.075	Normal
	Posttest 1	0.200	Normal
	Posttest 2	0.200	Normal
	Posttest 3	0.128	Normal
Data from the result of pre-test and post-test of education in improving oral and dental health knowledge using	Pretest	0.200	Normal
	Posttest 1	0.194	Normal
	Posttest 2	0.185	Normal
	Posttest 3	0.001	Not normal

3D pop-up fairytale books			

Variable of data from the post-test result of education of oral and dental health knowledge using flipchart media showed that in post-test 3 the p-value was < α 0.05 and other variables showed p-value > α 0.05.

It could be concluded that the results of the variable in post-test 3 with flipchart media were not normally distributed. Meanwhile variable of data from the pre-test, post-test 1-3 results in 3D pop-up fairytale book media and pre-test, post-test 1-2 in plipchart media were modeled well by a normal distribution at a significance level of 5%. Therefore, data of the study results of education in improving basic knowledge of oral and dental health in post-test 3 using flipchart media underwent the Mann-Withney test to find out whether there was a correlation between basic knowledge of oral and dental health using 3D pop-up fairytale book and flipchart media. Also, the Wilcoxon test was performed to find out the level of basic knowledge regarding oral and dental health in the pre-test and post-test of both groups. Data of other variables that was normally distributed underwent an independent t-test to find out the correlation of basic knowledge, and a paired t-test to find out whether there was a level of basic knowledge, and then a conclusion was drawn.

3.2 Hypothesis Testing

In this study, there were 3 hypotheses regarding the level of basic knowledge of oral and dental health, as follows:

1. There is a difference in the level of basic knowledge regarding oral and dental health before and after education using 3D pop-up fairytale books as the medium.
2. There is a difference in the level of basic knowledge regarding oral and dental health before and after education using flipchart media.
3. There is a difference in the level of basic knowledge regarding oral and dental health before and after education using 3D pop-up fairytale book and flipchart media.

In this study, the authors aimed to find out whether 3D pop-up fairytale book was effective in improving children's basic knowledge. Through an independent t-test and Mann-Whitney test, the authors aimed to find out whether there was a significant difference regarding improvement of children's basic knowledge between the 3D pop-up fairytale book group (treatment group) and flipchart group (control group) by comparing the results of post-tests 1, 2 and 3.

Table 3: Comparison of basic knowledge of oral and dental health between the use of 3D pop-up fairytale book and flipchart based on post-tests 1, 2 and 3

Variables	Significance level (*p-value*)
Data of the pre-test results between 3D pop-up fairytale book group and flipchart group	0.423
Data of the post-test 1 results between 3D pop-up fairytale book group and flipchart group	0.267
Data of the post-test 2 results between 3D pop-up fairytale book group and flipchart group	0.002
Data of the post-test 3 results between 3D pop-up fairytale book group and flipchart group	0.000

The results of the independent t-test showed that variable pre-test and post-test 1 had a p-value > 0.05 which means there is no significant difference of basic knowledge between both groups based on the pre-test and post-test 1 results. Meanwhile, according to post-test 2 (independent t-test) and post-test 3 (Mann-Whitney test) results, there is a significant difference of basic knowledge between both groups.

Table 4: To find out the level of basic knowledge of oral and dental health based on pre-test and post-test using 3D pop-up fairytale books and flipcharts.

3D pop-up fairytale book	Post-test 1	0.002
	Post-test 2	0.000
	Post-test 3	0,000
FLIPCHART	Post-test 1	0.003
	Post-test 2	0.045
	Post-test 3	0.234

The paired t-test was used to compare the pre-test to each post-test. In the 3D pop-up fairytale book group, the pre-test results were compared to post-test 1, post-test 2 and post-test 3 results, and for the flipchart group, the pre-test results were compared to

post-test 1, and post-test 2 results, and we found a p-value <0.05. Meanwhile, based on the table above, comparison between pre-test and post-test 3 in flipchart group was performed using the Wilcoxon test which found probability value Sig Z > 0.05. Therefore, it can be concluded that there was a difference of basic knowledge of oral and dental health before and after education using 3D pop-up fairytale books based on pre-test and post-test 1, 2, 3, and using flipchart media based on pre-test and post-test 1 and 2. The Wilcoxon test result found that there was no difference of basic knowledge of oral and dental health using flipchart media according to the pre-test and post-test 3.

4 DISCUSSION

The total sample in this study was 27 children aged 4-5 years who were kindergarten students in Sidoarjo, had dental caries, and had not received education on oral and dental health before the study, and had signed informed consent. The sample was classified into two groups. The treatment group consisted of 13 children enrolled in Kharisma Islamic Kindergarten-Play Group Buduran, Sidoarjo, treated with 3D pop-up fairytale books, while the control group consisted of 14 children enrolled in An-Nur Kindergarten Buduran, Sidoarjo. The study was conducted for 2 months with agendas of initial examination, pre-test, education, and 3 times of post-testing. In this study, we presented education of basic knowledge of oral and dental health using 2 different media, i.e. 3D pop-up fairytale book and flipchart. Both media were used with the same approach, i.e. storytelling. Generally, the combination of storytelling and media contained basic knowledge of oral and dental health. Based on Table 1, the mean score of children before and after treated with 3D pop-up fairytale books was 29.92 on pre-test, and improved to 32.92 on post-test 1 during the first week, then improved again to 33.69 on post-test 2 during the second week, and the score was constant at 33.69 for post-test 3 during the third week.

It was observed that education using 3D pop-up fairytale book presented significantly improved knowledge on post-test 2 and post-test 3 results over post-test 1 results, because education was given using interactive media and communication. Interactive communication can encourage the thinking ability of children, and thus improve children's behavior and knowledge. The presence of interactive communication and learning objects allowed the children to express their newly acquired knowledge, i.e using 2D phantom in 3D pop-up fairytale books; thus, the media facilitate the motoric ability of children and may improve children's learning experience. Children's knowledge expressed by post-tests 2 and 3 was more improved because in post-test 1 the children had just been on knowledge stage/ C-1 so that children had just been in their early learning stage, considering good or bad, and had a view of basic knowledge of oral and dental health. Meanwhile in post-tests 2 and 3, children's learning experience had been improved that caused their cognitive ability to develop into application/ C-2 that children were able to explain the basic knowledge of oral and dental health (Suardi, 2015). In post-tests 2 and 3, children's learning experience that had been applied daily made them more understand the meaning of the knowledge they had received during the first week or post-test 1 (Habibi, 2016).

The study was conducted on the second group with the same sample criteria but using a different medium of education, i.e flipchart as control. We found that there was improved knowledge from mean score pre-test 28.71 to 32.00 on post-test 1, but the mean score then decreased to 30.93 on post-test 2, and decreased again to 29.93 on post-test 3.

The decrease of mean score in sequence on the post-test 2 result and post-test 3 result may occur due to flipchart being a media with information presenting methods only by turning over one piece of paper at a time and each paper contains information related to the picture on that page (Notoatmodjo, Ilmu Perilaku Kesehatan, 2010). Lack of learning experience and phantom toys may also cause the presentation of knowledge to become less clear; therefore, it is not converted into experience (Habibi, 2016). Presentation of information is just performed verbally, whereas words have the lowest intensity in knowledge transfer and results in less clear information (Notoatmodjo, Promosi Kesehatan dan Perilaku Kesehatan, 2012). Lack of understanding, learning experience and unavailable learning media or objects could make the knowledge more difficult to acquire. In consequence, the mean score on post-test 2 and post-test 3 results decreased.

The pre-test results showed that there was no significant difference of the knowledge between both groups.

In the post-test 1 results, there was no significant difference between the groups because the media aimed to transfer knowledge. Therefore, from pre-test to post-test 1, both groups showed improved knowledge. Both groups were treated in the same way, and knowledge was presented by storytelling with pictures. Accordingly, we may conclude that both media demonstrate influence in improving basic

knowledge of children. However, from the post-test 2 and post-test 3 results for both media, there was a significant difference between them. According to Edgar Dale's theory, pictures that mimic real objects have a high ability to transfer information (Notoatmodjo, Promosi Kesehatan dan Perilaku Kesehatan, 2012). 3D pop-up fairytale books are fairytale books that have the innovation of static pictures to pop-up pictures, and mimics real objects (Sabuda, 2008). According to Aristotle, objects that move through the eyes will automatically give systematic information, and indirectly surprising objects will be transferred unconsciously into the brain (Gopnik, Meltzoff, & Kuhl, 2006). The pop-up feature also shows the effectiveness in explaining things more realistically; therefore, the pop-up feature is highly appropriate for childhood needs (Apriani, 2010).

The effectiveness of 3D pop-up fairytale books is affected by the presenter and supporting environment. Presenter ability in managing children is essential. The supporting environment in this context is the presence of interaction between presenter and respondents. Children aged 4-5 years tend to be afraid of strangers or things they do not know, and teachers also play a role to help the presenter communicate with respondents (Laksmiastuti & Wardhani, 2005).

The theory explained above may also become the reasonable explanation of the improved basic knowledge of children on post-test 1 that was not as high as post-test 2 and post-test 3, as the pre-test and post-test 1 were the initial stage of their interaction. Close communication and interaction was observed from the results of post-test 1 to post-test 2, to post-test 3 so that there was a significant improvement of basic knowledge of oral and dental health using 3D pop-up fairytale books. Good interaction was also obtained from storytelling wherein the fairytales presented pictures and text, and both of them aimed to make the story easy to understand and remember (Rosari, Agung, & Ambara, 2014). In addition, fairytales were presented with pop-up pictures, and the pop-up feature always gives a surprise on every page, because the pop-up pictures mimic real objects. This makes the reader more enthusiastic and look forward to the next page. Also, the pop-up feature may emphasize the information and impression that wants to be delivered (Sabuda, 2008).

The effectiveness score of 3D pop-up fairytale book and flipchart media were obtained by comparing the difference of pre-test and post-test scores of knowledge in Table 4. According to the statistical analysis, we may conclude that the effectiveness of 3D pop-up fairytale book and flipchart media is significantly different in improving children's basic knowledge.

Education using 3D pop-up fairytale book media showed that the result of post-tests 1, 2 and 3 demonstrated a significant improved knowledge; hence there was a difference of basic knowledge of oral and dental health between the pre-test, before education, and post-test, after education. Meanwhile, education using flipchart media showed improved basic knowledge on post-tests 1 and 2, but on post-test 3 there was no difference of basic knowledge of oral and dental health. This is in accordance with the theory that states that knowledge and related experience will be easier to memorize in the long term (Harianti, 2008). That is why *Bungpupti* media provided a difference of knowledge improvement, observed on comparison between a pre-test and post-test. 3D pop-up fairytale books have a context of daily living and is an appropriate learning experience. Experience of demonstrating toothbrushing with media that mimic the real objects plays a role in the learning experience to receive knowledge (Notoatmodjo, Promosi Kesehatan dan Perilaku Kesehatan, 2012). Memory-related theory states that there is a stage of association, i.e. stage when a person mentions an object and the brain will remember that object when touched. The presence of that experience causes a memory to be recalled and knowledge is easy to apply (Harianti, 2008).

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